UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,576	04/10/2007	Peter Charnock	APLE 200003US01	3813

27885 7590 03/07/2011

FAY SHARPE LLP
1228 Euclid Avenue, 5th Floor
The Halle Building
Cleveland, OH 44115

EXAMINER	
WEINER, LAURA S	
ART UNIT	PAPER NUMBER
1726	
MAIL DATE	DELIVERY MODE
03/07/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/551,576	CHARNOCK ET AL.	
	Examiner	Art Unit	
	/Laura S. Weiner/	1726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 January 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) *5,6,9,10,14-16 and 20-26* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7,8,11-13 and 17-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12-7-10*
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of a fuel cell comprising an ion-conducting polymeric material including Formula (1) cited in claim 4 where E=E'=oxygen and Ar= (iv) cited in claim 4 in the reply filed on 10-12-2010 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 5-6, 9-10, 14-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10-12-2010.

3. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-19, drawn to an ion conducting polymeric material and a polymer electrolyte membrane or gas diffusion electrode which includes the ion-conducting polymeric material which includes moieties of formula A.

Group II, claim(s) 20-26, drawn to a method of making a sulphonated ion-conducting polymeric material where the ion-conducting polymeric material includes moieties of formula A which are substituted on average with 1-3 sulphonate groups.

The groups of inventions listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

4. Group I is drawn to an ion-conducting polymeric material which includes moieties of formula A where each X in said moieties independently represent an oxygen or sulfur atom versus Group II a method of making a sulphonated ion-conducting polymeric material where the ion-conducting polymeric material includes moieties of formula A which are substituted on average with 1-3 sulphonate groups by contacting with a sulphonating agent.

5. During a telephone conversation with Mr. Scott McCollister on March 2, 2011, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-19. Affirmation of this election must be made by applicant in replying to this Office action. Therefore claims 20-26 are also withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Therefore claims 1-4, 7-8, 11-13, 17-19 have examined on their merits.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Response to Arguments

7. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

The rejection of claims 1- 4, 7-8, 11-13, 18-19 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 8-10, 12, of copending Application No. 11/602,186 has been withdrawn. The rejection of claims 1-4, 7-8, 11-13, 17-19 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2, 4-19 of U.S. Patent No. 7,799,465 has been withdrawn. The rejection of claims 1-4, 7-8, 11-13, 18-19 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 7,303,830 has been withdrawn.

Claim Rejections - 35 USC § 112

8. Claims 2-4, 7-8, 11-13, 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2-4, 7-8, 11-13, and 17 are rejected because the claims should claim, "The membrane or the electrode according to claim 1" instead of "A membrane or an electrode according to claim 1".

Claim 4 is rejected because it is unclear if the moiety of Formula I or Formula II or Formula III is addition to the moieties of Formula A or are further defining Formula A.

Claim Rejections - 35 USC § 102

9. Claims 1-4, 11-12, 18, 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsuo et al. (JP 1-198624, abstract).

Matsuo et al. teaches a copolymer having specific two kinds of recurring units by condensing 4,4'-dihalobenzophenone expressed by Formula (1) *[teaching moieties of formula A having metal-substituted oxygen atoms]* with dihydric phenols expressed as Formula (2). The material is suitable as a material in the electronic and electrical field, etc.

Claim Rejections - 35 USC § 103

10. Claims 1- 4, 8, 11-13, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helmer-Metzmann et al. (5,362,836).

Helmer-Metzmann et al. teaches polymer electrolytes comprising a sulfonated aromatic polyether ketone of the formula II *[includes moieties of Formula A]*. The polymer electrolyte is prepared by dissolving an aromatic polyether ketone in 94-97 wt% sulfuric acid and adding a sulfonating agent. Helmer-Metzmann et al. teaches in columns 3-4, that the sulfonation is carried out from 30-80 degrees C and typical reaction times are from 1-8 hours and that the H2SO4 concentration is from 98-99.5 wt%.

Helmer-Metzmann et al. teaches the claimed invention above except teaches that the moieties of Formula A includes para-substituted O atoms instead of the claimed

meta-substituted O atoms.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use moieties including meta-substituted O because one skilled in the art would expect similar chemical structures to exhibit similar properties. *See In re Payne, 606 f.2d 303, 203 USPQ 245, 254 (CCPA 1979). See In re Papesch, 315 F.2d 381, 137 USPQ 43 (CCPA 1963) and see In re Dillon, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1991).*

A prima facie case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities. "An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." In re Payne, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA1979). See In re Papesch, 315 F.2d 381, 137 USPQ 43 (CCPA 1963). Compounds which are position isomers (compounds having the same radicals in physically different positions on the same nucleus) or homologs (compounds differing regularly by the successive addition of the same chemical group are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties. In re Wilder, 563 F.2d 457, 195 USPQ 426 (CCPA 1977).

11. Claims 1-4, 7-8, 11-13, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charnock et al. (6,902,801).

Charnock et al. teaches a fuel comprising a polymer electrolyte composite membrane. Charnock et al. teaches in columns 25-26, a composite membrane comprising an ion-conductive polymer having a moiety of formula I and/or Formula II and/or Formula III where E and E' can be O or sulfur and Ar is selected from moieties (i)* or (i)-(x). Charnock et al. teaches that the ion-conductive polymer has the repeat unit of formulas IV, V, IV* or V*. Charnock et al. teaches in column 30, that the ion-conductive polymer has an equivalent weight (EW) of less than 500 g/mol. Charnock et al. teaches in columns 21-22, Example 6, that the polymers of Examples 1-5 were sulphonated by stirring each polymer in 98% sulphuric acid for 21 hours at 50 degrees C.

Charnock et al. teaches the claimed invention above except teaches that the moieties of Formula A includes para-substituted O atoms instead of the claimed meta-substituted O atoms.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use moieties including meta-substituted O because one skilled in the art would expect similar chemical structures to exhibit similar properties. *See In re Payne, 606 f.2d 303, 203 USPQ 245, 254 (CCPA 1979). See In re Papesch, 315 F.2d 381, 137 USPQ 43 (CCPA 1963) and see In re Dillon, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1991).*

A prima facie case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities. "An obviousness rejection based on

similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." In re Payne, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA1979). See In re Papesch, 315 F.2d 381, 137 USPQ 43 (CCPA 1963). Compounds which are position isomers (compounds having the same radicals in physically different positions on the same nucleus) or homologs (compounds differing regularly by the successive addition of the same chemical group are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties. In re Wilder, 563 F.2d 457, 195 USPQ 426 (CCPA 1977).

12. Claims 1-4, 7-8, 11-13, 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bridges et al. (US 2004/0224202).

Bridges et al. teaches a fuel comprising an ion-exchange material for a polymer electrolyte membrane or gas diffusion electrode. Bridges et al. teaches in columns 15-16, that the polymer electrolyte membrane or gas diffusion electrodes includes a copolymer having the formula IV or V or IV* or V where E and E' can be O or sulfur and Ar is selected from moieties (i)* or (i)-(x). Bridges et al. teaches that the a first unit is sulphonated to provide ion exchange site and that the second unit of formula IV or IV* is crystalline. Bridges et al. teaches in columns 10-11, Example 7, that the polymers of Examples 1-6 were sulphonated by stirring each polymer in 98% sulphuric acid for 21 hours at 50 degrees C.

Bridges et al. teaches the claimed invention above except teaches that the moieties of Formula A includes para-substituted O atoms instead of the claimed meta-substituted O atoms.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use moieties including meta-substituted O because one skilled in the art would expect similar chemical structures to exhibit similar properties. *See In re Payne, 606 f.2d 303, 203 USPQ 245, 254 (CCPA 1979). See In re Papesch, 315 F.2d 381, 137 USPQ 43 (CCPA 1963) and see In re Dillon, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1991).*

A prima facie case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities. "An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." In re Payne, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA1979). See In re Papesch, 315 F.2d 381, 137 USPQ 43 (CCPA 1963). Compounds which are position isomers (compounds having the same radicals in physically different positions on the same nucleus) or homologs (compounds differing regularly by the successive addition of the same chemical group are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties. In re Wilder, 563 F.2d 457, 195 USPQ 426 (CCPA 1977).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to whose telephone number is 571-272-1294. The examiner can normally be reached on M-H (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Laura S Weiner/
Primary Examiner
Art Unit 1726

March 3, 2011